ENGINEERS COMBAT REPORT ON STREETS

Mayor's Committee Advised Expert Help, but Sought None, Is Pointed Out.

NOT IGNORANT OF BEST

American Road Makers Know European Systems, but Conditions Are Different Here.

Most persons have been content to agree with the report of the Mayor's committee on pavements, which was made not so long ago, the general tendency of which was to be severely critical of the city's paving system and of the state of repair in which the streets were and are kept. So obvious were a good many of the matters to which attention was directed that the average person simply took for granted that these things were so and wondered why it was necessary to make them specifically a subject of report.

Not all, however, have been content to take the report at its own value or on its own face. Some identified with highway engineering call attention to the fact that although the committee consists entirely of laymen the report deals chiefly with technical matters.

"This is in line with the increasing tendency of civic organizations composed of laymen to take an active part in public affairs," is the way it is commented upon editorially in *Good Roads*. "That such efforts often result in much good is generally conceded, but at the same time it is a practice that is not always warranted. When investigating committees of business men, lawyers and others attempt to study strictly engineering problems without consulting engineers the results are not infrequently far from satisfactory. In spite of this, there seems to be a firmly rooted conviction on the part of some laymen that any one is competent to undertake the solution of engineering problems, although a like knowledge of medicine, law or any other particular profession or trade is not so generally assumed."

The analysis of the report continues further with comment directed toward the fact that although the committee urges that street work be put in the hands of competent engineers the committee itself did not make any use of the services of experts in preparing its recommendations or in pursuing its investigations. The old point about the superiority of the pavements of Europe with the implied idea that American engineers do not adopt foreign methods because they are ignorant of them is brought up once more. On these and kindred matters the journal of the paving business comments in an interesting way:

"Almost any one familiar with the pavements in New York city will admit that many of them are in very poor condition. That the situation is as bad as the report implies, however, or that the conditions are due to 'defective and antiquated specifications and obsolete methods,' 'slovenly and careless workmanship' and 'very little knowledge, among our engineers, of the most approved modern methods of paving as carried on in places outside of the United States,' will hardly be as readily acknowledged. Nor will many engineers agree with the last part of the statement that 'the conditions as enumerated have come about partly through inheritance and partly through the general lack of special knowledge of paving and the scant attention which has been paid to this important subject by our technical schools.' The details of highway engineering cannot be taught in technical schools, any more than can the details of any other branch of engineering, except as they may be taken up in postgraduate work.

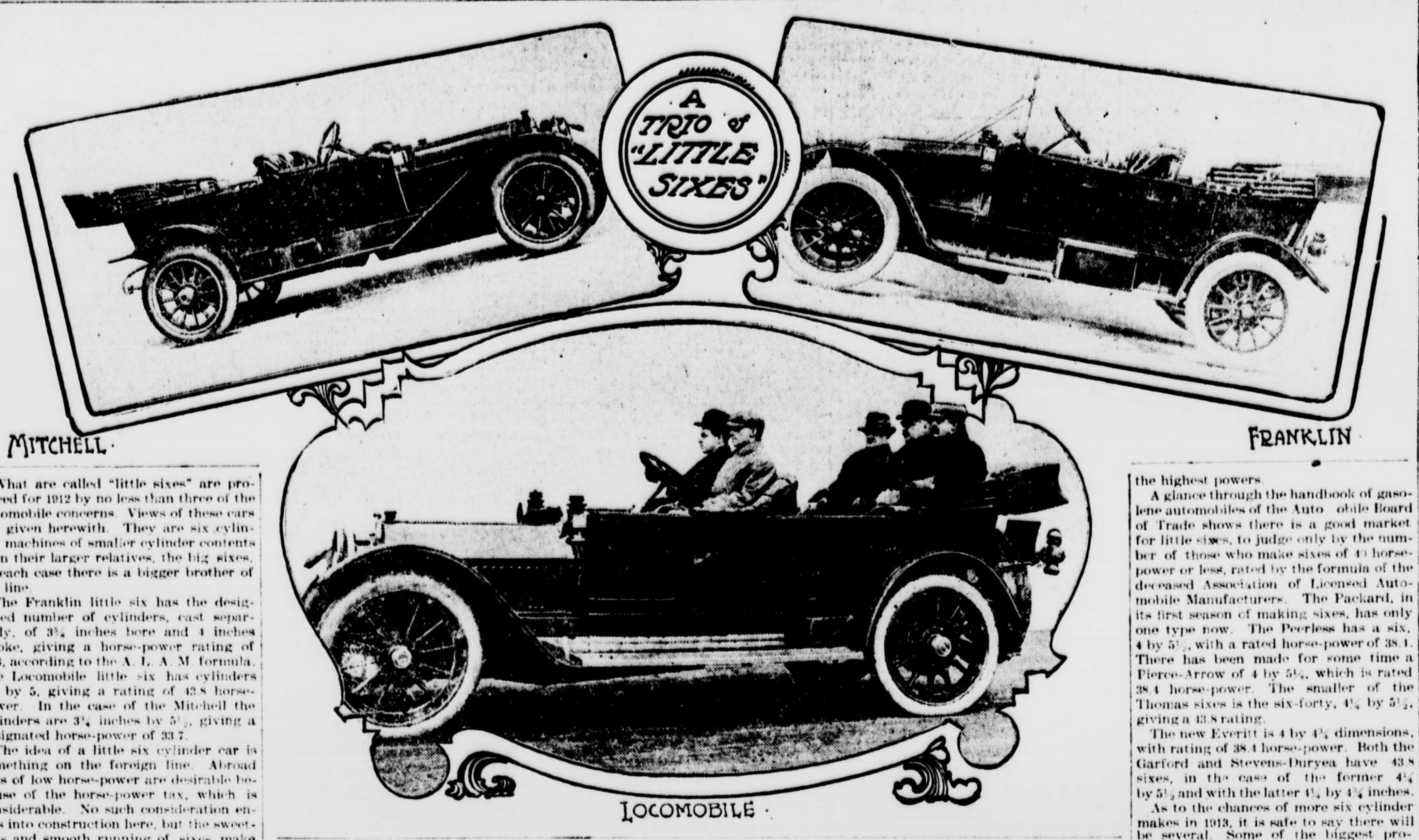
"All of the comparatively short time available for an engineering course is required for the study of subjects common to the various divisions of civil engineering, and specialization on one particular branch is impossible without the sacrifice of other and more important work. The function of the technical school, as generally accepted, is not to turn out specialists in any particular branch but to provide a technical education that will enable the graduate to take up intelligently the particular work which he finds to do.

"Another feature of the report is the insistence on the superiority of the pavements of Europe and on the desirability of copying the methods employed abroad. This idea is not new, for American road builders have for a long time been accustomed to having foreign methods held up to them as models. There seems to be an idea in some quarters that the failure of the engineers of the United States to adopt the methods employed abroad is due to ignorance of these methods and to a lack of technical ability.

"Apparently no consideration is given to the fact that in the United States and in foreign countries the systems of administration differ very greatly and that the chief engineering official in this country, at least, is usually a paid employee, having comparatively little freedom of action. Moreover, it is an open question whether or not the best foreign pavements are any better than the best pavements in this country, although visitors abroad are frequently led to believe they are. The American visiting a foreign city for the purpose of investigating the pavements goes to the city engineer or similar official and is shown the best streets—and no others.

"As might be expected, he assumes what he has seen to be typical of the pavements in general and so draws comparisons unfavorable to the pavements in his own city, where he is familiar with the worst as well as the best. By the expenditure of an amount of time and money much less than that required for a European trip, the New York business man in search of ideal pavements can undoubtedly find them within a few hours of his own office.

"Another fact that must be noted by the reader of the report is that although the committee urges that street work be put in the hands of competent engineers who are specialists in that particular line and that the subordinates in the street departments of the several boroughs be engineers, yet it does not appear that the committee has availed itself of the services of experts in making its investigations or its recommendations."



What are called "little sixes" are produced for 1912 by no less than three of the automobile concerns. Views of these cars are given herewith. They are six cylinder machines of smaller cylinder contents than their larger relatives, the big sixes. In each case there is a bigger brother of the line.

The Franklin little six has the designated number of cylinders, cast separately, of 3¾ inches bore and 4 inches stroke, giving a horse-power rating of 31.6, according to the A. L. A. M. formula. The Locomobile little six has cylinders 4¼ by 5, giving a rating of 43.8 horse-power. In the case of the Mitchell the cylinders are 3¾ inches by 5½, giving a designated horse-power of 33.7.

The idea of a little six cylinder car is something on the foreign line. Abroad cars of low horse-power are desirable because of the horse-power tax, which is considerable. No such consideration enters into construction here, but the sweetness and smooth running of sixes make them very desirable. Oftentimes folks had rather have a six than a four, but because of the great size of the average six cylinder machine can find nothing that appeals to them as moderate.

The building of a small six undoubtedly hits the public fancy in a great number of such cases. The growing popularity of six cylinder cars, as shown by the great numbers of new models coming on the market, is another reason for the making of sixes in moderate sizes as well as in the highest powers.

A glance through the handbook of gasolene automobiles of the Automobile Board of Trade shows there is a good market for little sixes, to judge only by the number of those who make sixes of 40 horse-power or less, rated by the formula of the deceased Association of Licensed Automobile Manufacturers. The Packard, in its first season of making sixes, has only one type now. The Peerless has a six, 4 by 5½, with a rated horse-power of 38.4. There has been made for some time a Pierce-Arrow of 4 by 5¼, which is rated 38.4 horse-power. The smaller of the Thomas sixes is the six-forty, 4¼ by 5½, giving a 43.8 rating.

The new Everitt is 4 by 4¾ dimensions, with rating of 38.4 horse-power. Both the Garford and Stevens-Duryea have 43.8 sixes, in the case of the former 4¼ by 5½ and with the latter 4¼ by 4¾ inches.

As to the chances of more six cylinder makes in 1913, it is safe to say there will be several. Some of the biggest producers of four-cylinder machines on the market are working on sixes now. Rumor includes among these Cadillac and Hudson.

RACING RULES COVER LOSS OF MECHANIC

Contest Board Makes Regulation to Fit Case Brought Up in Last Fairmount.

THREE WHEELED CARS IN

They Are Included in "Motor" Category—Safety Provisions in Detail.

Arising out of the disqualification of Spencer Wishart's Mercedes in the Fairmount Park race last year, when he ran part of the course without his mechanic, who had fallen from the seat, comes a change in the rules of the contest board of the A. A. A., which is as follows: "Should the mechanic leave his seat for any reason whatsoever at any time during the race the driver must not continue until the mechanician is again seated in the car. In case of disability or accident to the mechanician which may necessitate his leaving the car the driver may, after stopping and investigating, proceed alone to pits and make application to the referee for instructions."

Certain other changes have been made in the rules of contests, among which is one that the definition of an automobile has been altered so as to include three wheeled vehicles. Minimum weights heretofore prescribed in stock chassis events have been eliminated, and such contests will be governed by piston displacement, as are Class C events. No car or chassis competing in events held under price or piston displacement classifications is eligible for any division except that to which its price or piston displacement entitles it.

No driver or mechanician under 21 years of age will be permitted to compete in sanctioned events, and no person under 21 is to be appointed to any official position.

The powers of the referee of a contest have been somewhat enlarged, as will be noted by these two rules:

"He shall have the right to terminate a race before its scheduled finish, if emergency demands such action, and in such case no award shall be made."

"He shall have the right to temporarily stop or delay a race in case of impending disaster. Upon signal to stop the cars must line up in front of their pits (or in the paddock) and during the time the race is discontinued they shall be in charge of members of the technical committee and no work of any kind shall be done upon them."

The use of flags to signal contestants in track and road races has been made consistent. Heretofore the red flag in track races indicated "Stop" and in road races "Course is clear." The various flags and their use is shown:

Red flag—Course is clear.
Yellow flag—Blocked course; stop.
Green flag—You are entering your last lap.
White flag—Stop at pit on next lap for consultation.
Black and white checkered flag—You are finished.
Black flag with white centre—A competitor is trying to overtake you. (Road judges' flag for use on narrow stretches of course.)

In stock car and stock chassis events the use of detachable or demountable wheels which do not involve the change of wheel bearings or that portion of the hub carrying the bearings is not permitted except such wheels as are regularly supplied as stock equipment. In nonstock events such demountable wheels are permitted on the same basis as the use of detachable or demountable rim equipment.

The precautions taken to make track racing safer have been spoken of already in these columns. The language of these new sections is:

Fences—Fences should be of such a nature as not to endanger the lives of drivers and mechanicians of competing cars. The pole or top rail of fences at the inner and outer edges of the track on the curves must be removed, starting at a point where the curve begins and continuing to a point 25 feet beyond where the curve ends, measured in the direction in which races are run, i. e., with the left hand of the driver toward the inner fence.

Neutral Zones—Neutral zones must be established and maintained during the running of races. These zones should be 40 feet in width on the inner and outer curves opposite where the pole or top rail of the fences is removed, as required by the foregoing rule, and 30 feet in width on the straightaways.

Ditches, Holes or Obstacles—Ditches, holes or obstacles must not be permitted on the track between the inner and outer fences.

Anti-Dust—Adequate measures must be taken for the prevention of dust on the track. The use of water is not permitted, and dust must be laid by oils, calcium chloride or other similar preparations approved by the Contest Board.

Official sanction for track events is issued conditional upon a strict compliance with the above rules, and sanction shall be revoked in case of failure to meet each and every one of these requirements.

CITY OF AIR COOLED CARS.

Syracuse Has Three Makers Producing This Type.

Syracuse is the home of the air cooled car industry, three manufacturers there producing this type of car. The H. H. Franklin Manufacturing Company build both passenger and commercial cars. The Chase Motor Truck Company and the Sanford-Herbert Company confine their efforts to commercial cars.

The H. A. Moyer Company is the only automobile manufacturer in Syracuse building the water cooled type solely.

COLLEGE COURSE IN MOTOR TRUCK DESIGN

Professor in Rensselaer Polytechnic Plans Study as Part of M. E. Work.

Of indications of the great interest in commercial vehicles and their development, a strong one is the recent action of Rensselaer Polytechnic Institute of Troy, as disclosed in a letter from R. L. Streeter, assistant professor of mechanical engineering, to A. W. Robinson, truck sales manager of the Locomobile Company of America, relative to the establishment of a course in motor truck design in that institution.

Prof. Streeter has been desirous of including such a course in the curriculum of the school. Recently he got the necessary authority from the governing board. This course, which aims to be very thorough in its work, forms a part of the regular mechanical engineering course and is restricted to students in the senior year. The work embraces many problems of interest to the embryo truck designer. He gets data indicating the kind of load to be carried, speed on high gear, grade of road, kind of road, &c., from which he works out the tractive force necessary to the ton and the probable weight of the car.

His next step is to ascertain the brake horse-power of the engine, and in order to do this he is required to decide on a type of drive and to work out its efficiency. After the power of the engine is obtained he decides on a type of clutch, this being designed to take the maximum power of the motor. The shaft and transmission are then considered, each part being carefully designed to take the greatest load which will ever be put upon it. After the driving gear back to the rear sprockets is completed the springs are next taken up, after which the frame is designed.

Supplementary to the practical work of the course a series of lectures is given to acquaint the students with the latest practice in motor car and truck design. The course is so laid out as to have the student make an economical design by using high grade materials where they should be used and by keeping down the weight wherever possible but at the same time aiming to give to each part strength enough so that it will last as long as any other part of the car.

EXPORTING GOODYEAR TIRES.

Latin America an Attractive Market, Says Seiberling.

"The American manufacturer is awakening to the opportunities in the foreign market," says C. W. Seiberling, vice-president of the Goodyear Tire and Rubber Company. "South America offers a big field for American products, and now that there are greater shipping facilities and quicker transportation, year by year will see a still larger increase.

"This and an active interest in the development of business in Latin America enable the Goodyear company to go further into the field. In the last year there has been a material increase in the foreign trade of the company. Most of this, however, has been unsolicited and business has come through the knowledge the merchant in Latin America has gained of Goodyear tires through the columns of the American press."

The Goodyear Company is shipping to every country in the world, and particularly on carriage and solid tires its shipments to Latin America are large. Pneumatic tires are going in large quantities to Cuba and Manila and in fairly large quantities to New Zealand and Australia.

PAYING FOR "BAD ROADS" WORK.

Track for Testing R-C-H Cars to Be Built in Detroit.

Robert C. Hupp, the Detroit automobile manufacturer, says that he is the only man in the United States who is spending money to build "bad" roads. The R-C-H Corporation is making a testing track. There will be a quarter mile oval where the cars will be tested for speed. To one side of the track will be a pyramid like mound where they will be forced to do grade work. On the other side of the area will be the "bad" roads.

The land at this point, bordering on the Detroit River, is swampy and a stretch of "mud" road to vie with Iowa gumbo will be prepared. A "sand" stretch will be laid out by means of cargoes of fine River St. Clair sand.

The plan has received the approval of Police Commissioner Croul. The City of the Straits is at present waging a war on the city's scores of testers. Only recently the recorder's court Judge in Detroit sent two testers to jail for 30 days without the option of a fine.

"Cities do not lay pavements for speedways," said the Judge. "Further violations will be treated in the same manner."

TIRES WILL MEAN $120,000,000.

Estimate of 1912's Totals, as Made by a Manufacturer.

Men in the automobile tire industry predict that in 1912 tire sales will amount to more $120,000,000. There are somewhere near 600,000 machines in operation in the United States at the present. Figuring six tires to a car for twelve months of service (this is the manufacturers' basis) it will be seen that the motorists of this country will require approximately 4,000,000 tires this year. Putting these down at an average cost of $30 each, an aggregate of $120,000,000 is shown.

"These figures are not far from correct," says J. M. Gilbert, general manager of the United States Tire Company. "That 1912 will be by all odds the banner year of the tire industry is already assured. Dealers everywhere are stocking up for the season. The United States Tire Company does only a wholesale business and is in close touch with dealers throughout the country. We are commencing to get a definite line on the year's output of tires.

"For more than a year our four big factories have been running day and night. The result is that, whereas last season we never were able to catch up to our orders, we are prepared this year. Months ago we realized how great the demand would be when dealers commenced sending in their orders and we have safeguarded ourselves against a possible shortage."

VANDERBILT'S IDEAS IN CAR.

Alco Owned by W. K., Jr., Follows His Own Design.

An Alco car just received by William K. Vanderbilt, Jr., has body lines designed after ideas of the owner. The car is of the tourabout type. Mr. Vanderbilt drove a raceabout on this six cylinder Alco chassis last year. With its new body the car has the appearance of a racer, the more so because of the rake in the steering column and a considerable tilt of the fenders, which narrow down at the front. The seats are built close to the tonneau floor.

In place of running boards along the sides there is a step close to each rear door. The doors open from back to front.

PACKARD LINES GOING OUT.

Statement of Models in Which the Company Is Sold Out.

With several months of the 1912 season still to run, the Packard Motor Car Company has closed out its line of Six runabouts, 30 phaetons, coupes of all sizes, Six and 30 limousines and landaulets.

A limited number of Six touring cars and phaetons, 30 runabouts and touring cars and 18 open cars, remain to be sold.

A.L.A.M. FORMULA DOES ACCOUNT FOR STROKE

Horse-Power Rating, Seemingly Figured on Bore Alone, Allows for Piston Speed.

COFFIN EXPLAINS THIS

Engineer Defends the Present Scheme, Especially on Basis of Simplicity.

From time to time there has been discussion of a horse-power formula for automobile engines which should be more nearly accurate than the present rating is supposed to be. What is called the A. L. A. M. formula, which also is the Royal Automobile Club formula, is that in which the bore squared, multiplied by the number of cylinders, is divided by the constant 2.5. It has been objected by a great many persons that this formula is faulty in that it does not take into consideration the length of the stroke of the motor. This objection is founded on a mistaken idea of the situation as it is explained by Howard E. Coffin, ex-president of the Society of Automobile Engineers.

Mr. Coffin points out that by the denominator of the fraction, that is to say, the constant 2.5, a piston speed of a thousand linear feet of travel in a minutes is assumed. In other words, that the piston in its motion within the cylinder is presumed to travel a thousand feet within the time of one minute. Five hundred feet of this travel is in one direction in the ordinary vertical engine, and the other 500 feet in the opposite direction.

The idea is that the amount of piston travel a minute, and not the number of revolutions of the crank shaft, limits gas engine speed. Mr. Coffin points out that motors of equal cylinder diameters working at the like piston speed are not materially affected as regards the amount of power developed by the length of the stroke.

In discussing the question Mr. Coffin says: "For many years steam and gas engines have been built in this country for industrial power plant work and it has been determined by experiment and by many long years of actual practice that piston speeds of from 800 linear feet of piston travel per minute are the proper speeds for this class of work, where engines are expected to perform satisfactorily ten hours a day and for every working day in the year. Hence it will be seen that the assumption upon which is based the formula D square x M, divided by 2.5 errs, if at all, upon the high side in assigning to the motor car engine more than 200 feet of piston speed a minute in excess of the speeds which have been determined upon as commercially feasible, practical and satisfactory, after years of experience in power plant engineering.

"That the consideration of a thousand feet of piston speed a minute which forms the basis of the formula does take into account the length of the stroke of the motor may of course be easily seen. For instance, supposing that we have two motors, one having a stroke of six inches, the other a stroke of twelve inches. If the piston in both instances is made to travel a thousand feet a minute of linear speed within the cylinder, then the crank to which is attached the piston, having a six inch stroke, will necessarily turn twice as many times as will the crank shaft to which is attached the piston, which covers twelve inches at each stroke.

"In this same connection it may also be assumed that if the motor employing the six inch stroke is running twice as fast as the motor employing the twelve inch stroke the powers developed by these two motors will be equal, assuming of course that equal cylinder diameters are employed."

In suggesting a good system for taxing motor cars on a basis of horse-power Mr. Coffin says that the ideal scheme would be to determine the average piston speed a minute at which the motor is driven by the owner for a period of a year. That would give something definite on which to base the assumption of the amount of horse-power exerted by the rear wheels in the performance of a year's service on the road. That would give a formula for the amount of wear done to the road through the use of the car and would provide a basis for the determination of the average energy which has been expended in work by the driving wheels on the roadway surface.

"I do not believe that there will be found any one in this country who will not agree that as an average for a year's car driving the figure of 1,000 feet of piston speed a minute is entirely too high," says he. "For instance, as I remember it, in an engine having 4½ inch stroke 1,000 feet of piston speed a minute means more than 1,200 revolutions a minute of the crank shaft. It is very easy to figure the miles an hour which this would represent. There is not a single car in this country which throughout the year will maintain anywhere near this average in piston speed, motor revolutions, or miles an hour. Hence the formula is, if anything, too high for taxation purposes, in that it has for its basis 1,000 feet of piston speed a minute and represents that the motor car operator maintains an impossible average of this piston speed throughout the entire year.

"Again, one of the necessary requisites in connection with any taxation formula is simplicity. There is only one method of horse-power rating more simple than the formula $D^2 x N$, divided by 2.5.

"This other method depends upon the assumption of ten cubic inches of piston displacement for each horse-power. Take, for instance, a four cylinder engine of four inch bore and five inch stroke. The total piston displacement of these four cylinders will be found to be 251.3 cubic inches. Dividing this by ten, as mentioned above, gives us 25.13 horse-power. This means, in reality, merely the setting over of the decimal point one figure. For instance, take an engine of 4½ inch bore by 5½ inch stroke. The total piston displacement will be found to be 349.9. Dividing by ten, or setting over the decimal point one figure, will give us 34.99 horse-power.

"Tables giving all possible cylinder dimensions and other volumes for one, two, three, four and six cylinder engines may be easily had. In the back of the 1911 A. A. A. Contest Board rule book will be found a table covering four cylinder engines, from which may easily be developed the tables for motors having any other number of cylinders.

"It has been suggested that vehicles might be taxed upon gross weight. In a letter upon this subject written three years ago to Charles Thaddeus Terry, chairman of the A. A. A. Legislative Board, will be found a discussion of the relative importance of the weights and speeds as applying to both road vehicles and to railroad transportation.

"Considerations of speed and weight are of course necessarily intimately interwoven with consideration of horse-power. In the case of any shock or work accomplished or damage done by a moving body we will find the factors of weight and velocity entering in the form of MV^2. It will be noted that weight enters as of the first power and velocity as of the second power. Now velocity is dependent upon the size of the motor as related to the load to be moved, that is the weight of the car.

"It may be easily seen therefore how much more important is the motor size than is the weight of the vehicle. It would therefore seem logical that any formula for taxation be based upon motor size, upon ability of that motor to develop power."

KEEP KEROSENE FROM TIRES.

It May Clean Them, but It Eats Up the Rubber.

Washing tires and washing a car are two different propositions, says the Michelin tire expert. Water alone should be used to wash tires and as little of it as necessary. After every run the envelope should be wiped clean with a damp sponge or well wrung cloth.

A common mistake made by motorists in washing tires is to mix kerosene with water. This may be advisable when washing the body of a car to remove mud and dust from the varnish, but kerosene eats rubber. Every time a tire is washed with a kerosene mixture the rubber is deprived of more of its strength.

When washing tires it is best simply to dampen a sponge with clean water, care being taken that the sponge is not soaked and dripping. Then wipe the tires dry with a cloth or handful of waste. This and other phases of the tire question are fully covered in the "Books of Bibendum" sent free to motorists upon request by the Michelin Tire Company of Milltown, N. J.

AMERICAN CARS IN LEAD IN PORTO RICO

Foreign Made Trucks and Touring Automobiles Greatly in the Minority.

All save a handful of cars among the 724 registered on the island of Porto Rico are American made machines. Altogether, counting foreign trucks and touring cars, there are less than a dozen other than machines from the United States in this collection. There are about seventy different makes represented on the island.

The leading car in point of numbers is the Ford. The Pope-Hartford is a close second and next to it comes the Maxwell. The Mercer and Stevens-Duryea are the other machines in the first five. Cadillac, Buick, Autocar, Hudson and Atlas follow in the first ten, in that order.

The list of motor vehicles licensed, in force on February 1, in the island of Porto Rico has been inspected and a summary made of the numbers of the various types of manufacture. A nearly complete list is as follows:

Ford	63	Everitt	5
Pope	56	Oakland	4
Maxwell	41	Rainier	4
Mercer	38	Waltham	4
Stevens-Duryea	35	Pierce-Arrow	3
Cadillac	32	Winton	3
Buick	29	White	3
Autocar	28	Rambler	3
Hudson	27	American	3
Atlas	20	Lexington	3
Studebaker Lines	19	Baker	2
Locomobile	18	Brush	2
Hupmobile	16	Carhartt	2
Thomas	15	Holsman	2
Overland	15	Kissel	2
Oldsmobile	14	National	2
Chalmers	13	Regal	2
Mitchell	13	Warren	2
Reo	11	Abbott-Detroit	1
Peerless	10	American Truck	1
Knox	10	Babcock	1
Corbin	8	Black Crow	1
Haynes	7	Cameron	1
Lozier	6	Colby	1
Franklin	6	Enger	1
Packard	6	Interstate	1
Stoddard-Dayton	6	K-R-I-T	1
Speedwell	6	Metz	1
Jackson	6	Matheson	1
Firestone-Columbus	6	Marathon	1
Otto	5	Northern	1
Pullman	5	Schacht	1
Peray	5	Velie	1
		Wayne	1

PROGRESS OF THE ELECTRIC.

Trucks Have Kept Pace With Gasolene Practice, Says C. L. Morgan.

C. L. Morgan, sales manager of the electric division of General Motors Truck Company, says the electric truck has kept pace with the standard set by gasolene pleasure car and truck makers, and that as to the mechanical efficiency they are on a par.

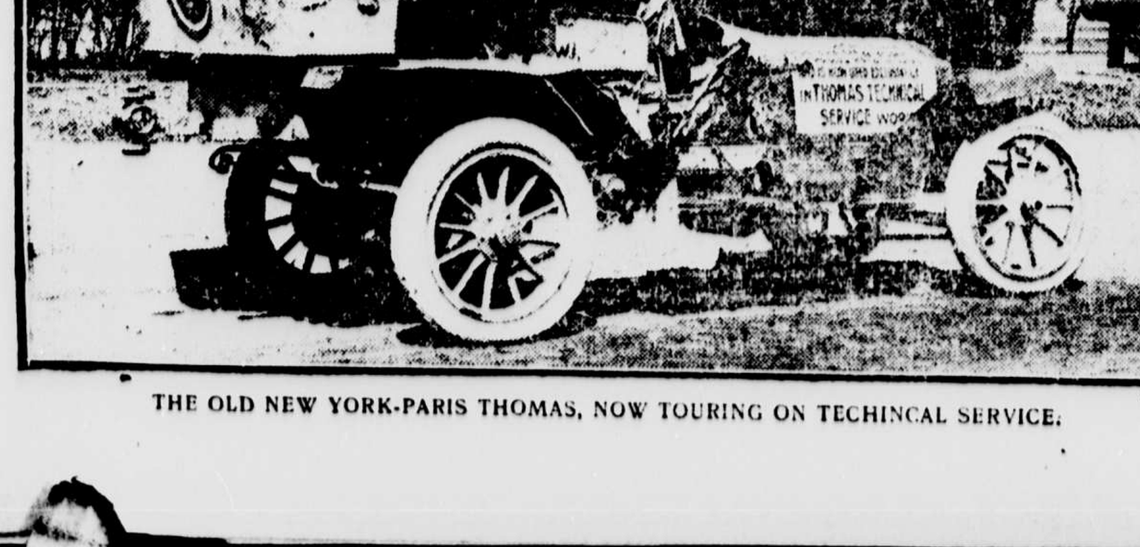
"Just because the gasolene chassis is the popular one to-day," he says, "isn't to the discredit of the electric. They both have their distinct fields, but do not think for a minute that the electric truck makers have not been progressive, for they have worked just as hard to get the serviceable truck as the other branch of the industry."

Poertner Co. Moves Service Department.

The Poertner Motor Car Co. has moved its service department and stockroom to new quarters at 522 West Fifty-seventh street. This is a fireproof building equipped with modern machinery.

Kilbane Buys a White.

Johnny Kilbane, the featherweight champion pugilist, has bought a White gasolene car, equipped with the electric self-starting device. Kilbane says he can't take chances with his good right arm cranking a car.



THE OLD NEW YORK-PARIS THOMAS, NOW TOURING ON TECHICAL SERVICE.

MAHARAJAH OF HUTHWA, INDIA, IN HIS NEW HUDSON.